

ILLUSTRATED

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MEDICINE AND SURGERY.

EDITED BY

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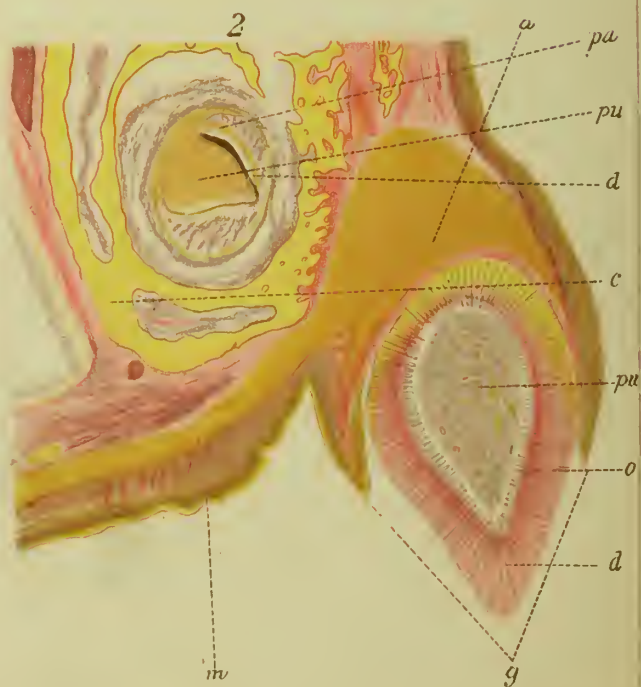
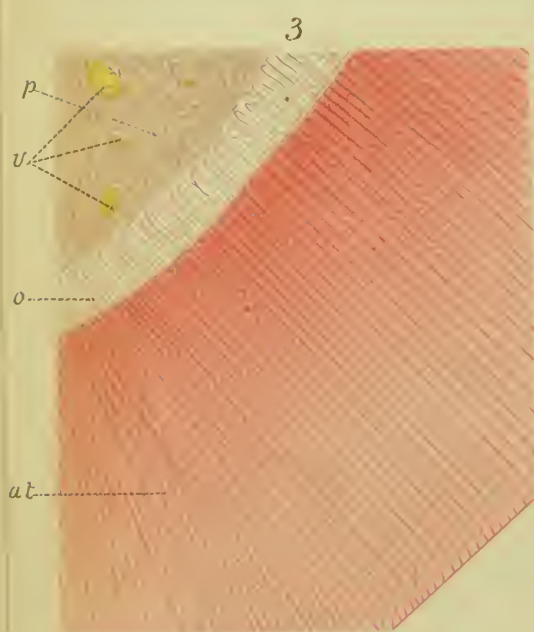
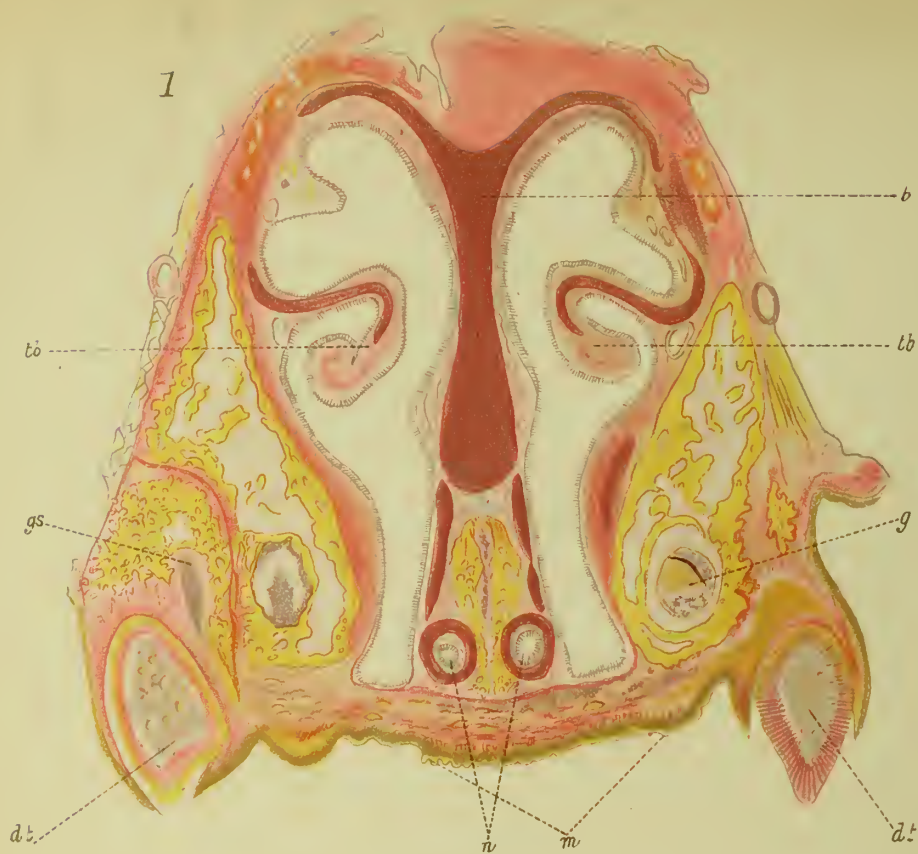
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XVII. DENTAL DEVELOPMENT. *Microscopic sections.* *(By Prof. W^m Hailes Jr.)*



14.

DENTAL DEVELOPMENT.

BY WM. HAILES, JR., M.D.,

Prof. of Histology and Pathological Anatomy, Albany Medical College.

The following contribution, together with the accompanying illustration, is one of a contemplated series of articles which, through the courtesy of the editors, will appear from time to time in their valuable journal:

The subjects will be in normal and pathological histology and embryology, the object being to call attention to methods available for instructing classes in practical laboratory work, demonstrating the feasibility of making comprehensive sections which not only give the topography of the parts and their important relations to each other, but also permit a most satisfactory minute examination in any part of the section, having the uniform thickness of about $\frac{1}{1200}$ of an inch.

We have chosen for our illustration a section through the superior maxilla of a kitten two weeks old.

The jaws were decalcified by means of picric acid, were placed in mucilage, and cut in the freezing microtome into hundreds of sections, each about $\frac{1}{1200}$ of an inch in thickness. These sections are kept preserved in alcohol for future use in the laboratory.

Any section taken at random from the bottle, will illustrate perfectly the points necessary to be seen in studying the structure of growing bone, teeth, etc., etc., differing slightly, however, according to the locality from which the section was taken, whether canine, premolar, or molar.

The drawing accompanying this article is from a section directly through the canine teeth, and exhibits beautifully not only the general structure and arrangement of the jaws—teeth (both temporary and permanent)—but also the nasal passages, vomer, turbinated bones, mucous membrane, etc., besides demonstrating perfectly the minute structure of pulp-odontoblasts and dentine, and exhibits the germ of the permanent canine inclosed in its special osseous chamber.

The sac of the permanent tooth, after a certain stage of its development, adheres to the back of the sac of the temporary tooth. “Both of them continue to grow rapidly, and after a time it is found that the bony socket not only forms a cell for the reception of the milk-sac, but also a small posterior recess or niche for the permanent tooth-sac, with which the recess keeps pace in its growth; it is found

DENTAL DEVELOPMENT.

that at length the permanent sac so far recedes in the bone as to be lodged in a special osseous chamber, at some distance below and behind the milk-teeth, the two being completely separated from each other by a bony partition."* (See Fig. 101.)

Many other subjects of greater interest might have been chosen from sections now in the laboratory, for after ten years or more of work in the teaching of practical microseopy in the laboratory of a medical school, one learns to simplify methods and make improvements, and to bring within the range of accomplishment many things hitherto beyond the reach of the student, because of the time required for their preparation and study.

In this work I have been greatly assisted by my friend and assistant, Dr. S. G. Shanks, of Albany. I am also greatly indebted to my friend, C. E. Beecher, of N. Y. State Museum, Albany, in the preparation of the drawings.

There are many other points of interest in this section, which an inspection of the Figs. will exhibit.

Explanation of Figures.—Superior Maxilla of Kitten. Fig. 100. *v*, vomer; *t b*, turbinated bone; *d t*, deciduous or milk teeth; *g*, germ of permanent canine; *n*, nasal passages, lined by mucous membrane and covered by ciliated epithelium.—X 9.

Fig. 101. Canine (temporary and permanent). *pu*, pulp; *o*, odontoblasts; *d*, dentine; *c*, osseous chamber for permanent tooth-germ; *m*, mucous membrane of roof of mouth; *r*, gum.—X 18.

Fig. 102. Canine, x 200. *p*, pulp; *v*, vessels; *o*, odontoblasts, showing processes, etc.; *d t*, dental tubules.

* Quain's Anatomy.

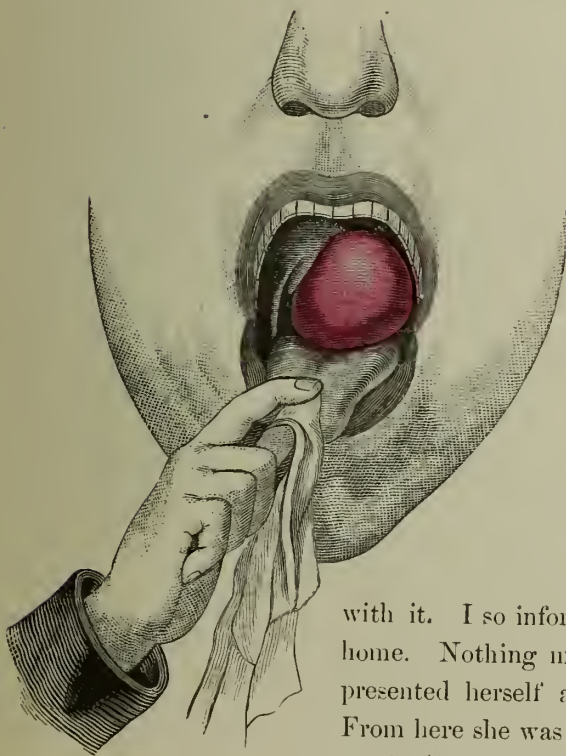


15

A CASE OF PALATO-PHARYNGEAL SARCOMA.

BY JOHNSON ELIOT, M.D.,

Emeritus Professor of Surgery, Medical Department of Georgetown College. Surgeon to Providence Hospital, Etc., Washington, D. C.



In the summer of 1880, Miss F. V. White, aged twenty-three, was brought to Providence Hospital for examination. Her general appearance indicated impaired health. She was anemic, feeble and emaciated. Examination revealed a tumor the size of an English walnut, situated upon the left side of the palate, extending to the pharynx and tonsil of the same side. She informed me that it had been growing for more than a year. Her voice was husky, deglutition painful, and respiration slightly embarrassed. The tumor was elastic on pressure, painful to the touch, and several deeply ulcerated points were noticed on its surface. The lymphatic glands of the corresponding side were enlarged and sensitive. The tumor was diagnosticated as malignant, and it was not deemed advisable to interfere

with it. I so informed her mother, and advised that she be taken to her home. Nothing more was heard of her until November, 1881, when she presented herself at the Central Dispensary in this city for treatment. From here she was sent again to Providence Hospital. A short time afterwards, November 1st, she was admitted, with the determination to submit to any treatment that might offer even temporary relief. Her general condition was somewhat improved since her first visit to the hospital, but the local trouble had greatly increased. The tumor had increased in size; its pressure upon the palate and surrounding parts rendered her respiration, particularly in the recumbent position, painful and embarrassed; it was impossible to close the mouth, and

A CASE OF PALATO-PHARYNGEAL SARCOMA.

there was great salivation. The ulcerations had cicatrized; the surface had become smooth; the lymphatic glands of the neck had decreased in size. With the local changes for the better in the tumor and her generally improved condition, we concluded that the growth was not as malignant as I at first supposed. Under the existing circumstances it was deemed advisable to operate.

On November 22d, 1881, in the presence of Drs. Ashford, Magruder, Carroll, Morgan, Bayne and Mallan, I proceeded to operate. The patient was seated on a chair, with her arms pinioned. Anæsthetics were not used for evident reasons. From the extreme vascularity of the region and the seemingly congested appearance of the tumor, hæmorrhage was anticipated, and ample precautions were taken for its suppression in the event of its occurring. Hæmostatics were at hand, the thermo-cautery was within reach.

An incision was made in the long diameter of the tumor, and its contents were rapidly enucleated. Several small pieces of bone came away with it. To our surprise, but little hæmorrhage followed; no ligatures were required, and no hæmostatics were applied. The bleeding ceased with the conclusion of the operation. On the second day after the operation hæmorrhage occurred, profuse but passive in character. Dr. Mallan, house surgeon, plugged the cavity with lint saturated with Monsel's solution of iron, and the hæmorrhage was finally controlled. The patient convalesced slowly. After several weeks in the hospital she left.

February 16th, 1882. Greatly improved in health, and relieved of all her former suffering. I received several letters from her while at home, writing encouragingly of her condition, and congratulating herself on her returning health. To my surprise she returned to the hospital on March 12th, 1882. An examination revealed a small swelling at the side of the cicatrix; it gave her but little inconvenience; she was concerned about it, however, and was anxious to have it removed. I intended to remove it at once. On the day fixed for the operation, March 13th, while conversing with a patient in the ward, without premonition violent hæmorrhage took place, and death followed immediately. No autopsy was made. The presumption is that some large vessel was opened by the softening of the tissue and yielded to the arterial pressure. Microscopical examination demonstrated the tumor to be a spindle-cell sarcoma.

EXCISION OF THE SHOULDER JOINT.

BY RANDOLPH WINSLOW, M.D.,

Demonstrator of Anatomy in the University of Maryland, and Professor of Surgery in the Woman's Medical College of Baltimore.

CHARLES C. SMITH, negro, aged 39 years, a rag-picker by trade, was admitted to the University Hospital on May 29th, 1882, with the diagnosis of caries of the shoulder joint.

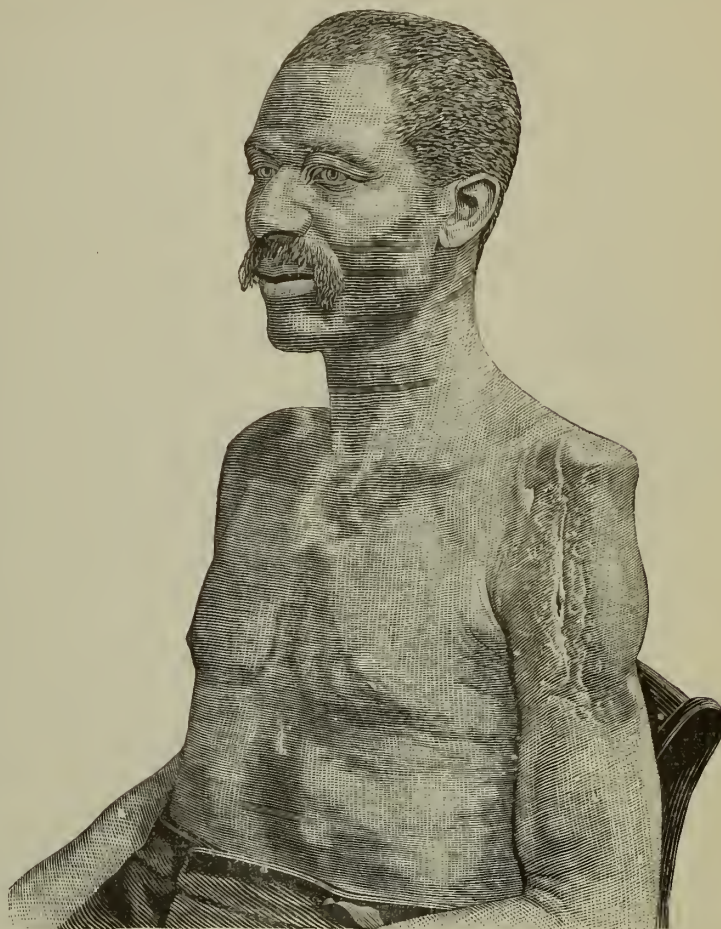
His sickness dates back about ten months, and is supposed to be consequent to rheumatic arthritis.

Condition upon admission: Patient somewhat emaciated, and exhibiting symptoms of hectic. Has lost all use of his left arm, and as he walks he supports the diseased arm with the sound hand. Has pain, worse at night and upon any motion of the part. The left shoulder is flatter than normal, and the caput humeri is partially dislocated under the coracoid process. Several sinuses are found upon the posterior aspect of the arm, just behind the insertion of the deltoid muscle, and two others are present in the axilla. From these openings pus constantly exudes.

May 31st. The patient was anesthetized, and probes were introduced into the sinuses in the expectation of finding carious bone, but as no probe in my possession was long enough to reach the diseased surface, I contented myself with establishing better drainage by straightening some of the sinuses, and inserting tubes in various directions.

June 14. Caries of the head of the humerus was detected by a long probe, and excision was determined upon.

June 16. The head and one inch of the shaft of the humerus was excised by a single straight incision, extending from the anterior border of the acromion process almost to the insertion of the deltoid, and passing through the anterior portion of this muscle. The periosteum and capsular ligament were divided longitudinally, and with the insertions of the pericapsular muscles were separated



EXCISION OF THE SHOULDER JOINT.

from the bone by periosteal elevator and scalpel, and retained. The detachment of the periosteum was a difficult process on account of the large amount of osteophytic growth which was present. The long head of the biceps had disappeared. The glenoid cavity had become obliterated and was filled up by a granulating mass, and no caries of the portion of the joint could be detected. The head of the humerus was protruded with some difficulty, and the section was made with a chain saw about an inch below the surgical neck. The specimen removed was carious at its posterior aspect, where there was a small undetached sequestrum, and anteriorly there were deep excavations behind the tuberosities.

The wound was thoroughly irrigated with a carbolized lotion, and a drainage tube passed entirely through the cavity and brought out posteriorly through one of the previously-existing sinuses. The wound was closed with wire sutures and dressed externally with iodoform, a pad of carbolized oakum surrounding the whole. The arm was extended upon a board splint at right angles from the body for the first few days; subsequently it was simply supported in a sling under the elbow and fore-arm.



FIG. 105.

June 20. All the sutures removed, and union by the first intention was found to have taken place except at the point of entrance of the drainage tube at the upper portion of the wound. The large cavity left after the removal of the bone was kept clean and disinfected by carbolized lotions injected through the tube. The highest temperature reached was $101\frac{1}{2}$



FIG. 106.

on the fourth day, which fell to $99\frac{3}{4}$ on the fifth day, and never exceeded $100\frac{3}{4}$ subsequently.

After the line of incision had healed several sinuses formed in the cicatrix, probably due to the retention of some discharge after the removal of the drainage tube. These tracks were laid open and healed from the bottom, except one through which a small quantity of serum still escapes. All the pre-existing openings have gradually closed.

Result of the operation: The patient's general health is restored; he eats heartily, sleeps well, and is in good flesh. The functions of the forearm are perfect, and its muscles well developed. Motion between humerus and scapula limited; can abduct the elbow from the side nine inches; has considerable backward motion, but has not much power to push the arm forward beyond the plane of the body.

The man is able to lift heavy weights and to pursue his business. He has a useful member but an impaired one. He was rapidly running down and could not have waited for a cure by natural processes, even if that had been possible, and the choice lay between amputation at the shoulder or excision of that joint. I chose the latter, and the result justifies the procedure.





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3

XVIII COMPOUND COMPLICATED HARELIP

(CASES OF PROF. J. L. LITTLE)



17

THREE CASES OF COMPOUND COMPLICATED HARE-LIP,

OCCURRING IN THE SAME FAMILY ; OPERATIONS FOR RESTORATION OF LIPS ; WITH
REMARKS ON THE OPERATION FOR CLEFT PALATE.

BY JAMES L. LITTLE, M.D.,

*Professor of Clinical and Operative Surgery in the New York Post-Graduate Medical School ; Professor
of Surgery in the Medical Department of the University of Vermont ; Surgeon to St.
Luke's and St. Vincent's Hospitals, New York City, &c., &c.*

The cases will be described in the order in which they came under my observation :

WILLIAM BOCOCK, aged 21. JOHN BOCOCK, aged 9. CHARLES BOCOCK, aged 18.

No hereditary tendency can be traced in father or mother's family. There were four boys and five girls. All the boys were born with hare-lip, while no deformity existed in any of the girls.

The order in which the children were born is as follows :

1. William. Compound complicated hare-lip.
2. A girl with no deformity.
3. Charles. Compound complicated hare-lip. A spindle-celled sarcoma made its appearance on the left side of the perineum in 1878, which I removed. It recurred, and I again removed it in October, 1882.
4. Girl with no deformity.
5. Girl with no deformity.
6. John. Compound complicated hare-lip ; absence of ring-finger of right hand.
7. Girl with no deformity.
8. Girl with no deformity.
9. Boy with single hare-lip, who died in infancy.

These patients presented this deformity in almost the worst possible form, the arrest of development occurring at a very early period of foetal life. The inter-maxillary bone in each case was distinct, being ununited to the superior maxillaries, and was continuous with the nasal septum and vomer. This projecting bone was partially covered by a tag of integument, which was continuous with that of the tip of the nose. In John (Case II), this bone contained two well-developed incisor teeth, while in William and Charles (Cases I and III), there was but one. There was a complete absence of both the hard and soft palate in all the cases, and in Case III the fissure was unusually wide (4 cm.). Articulation was so imperfect that they could be understood with the greatest difficulty.

Operations.—*Case I.*—William. Uranoplasty was performed at St. Luke's Hospital on February 9th, 1878. The sides of the fissure in the hard palate being imperfectly developed, and running obliquely upwards and inwards, the only operation that could be performed was the dissecting of the soft parts from the bone, from above downwards, and allowing them to meet at *B*, Fig. 113.

COMPOUND COMPLICATED HARE-LIP.

This was done, and there was sufficient material for the flaps to overlap in the central line. A small strip was removed from each flap and the edges accurately joined together. The union was complete throughout. The sutures were removed, and I felt sure of a satisfactory result. In about a week

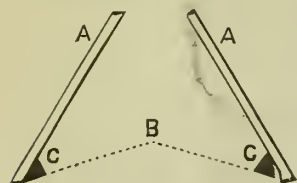


Fig. 113.

I found the line of union growing thin and showing indications of breaking away. An examination with the laryngeal mirror in the nasal cavity showed that granulations were springing up at the angles *c c*, and a line of ulceration was visible along the nasal surface of the wound, *B*. The union of the flaps finally gave way, and they assumed almost their original position in contact with the bony walls, *A A*, with the exception of a piece about

one inch in width, at a point near the posterior edge of the hard palate. No further operation was permitted for the relief of this part of the deformity.

Operation for the Restoration of the Lip.—March 21st, 1878. The piece of integument covering the inter-maxillary bone was dissected up to the tip of the nose, and the projecting bone containing the incisor tooth was removed with bone forceps. The piece of integument which had been lifted up was then trimmed, turned down and accurately adjusted against the raw edge of the septum, so as to form a columna; this was retained in place by two silver wire and shot sutures, running directly through the septum. The union was perfect. On April 17th the following operation was performed:

The two portions of the lip were separated freely from the superior maxillary bones and a piece was removed on either side of the cleft by a pair of curved scissors. The posterior extremity of the newly formed columna was freshened, the edges of the fissure were brought together and retained in position by two pin sutures and a number of fine interrupted silk sutures. The columna was also nicely adjusted in the upper portion of the fissure. Good union took place everywhere except at the columna and the right side of the lip, and a considerable notch was also left in the centre of the lip. The boy went home during the summer to allow the parts to become soft and more yielding. He returned to the hospital December 9th, 1878. The edges of the opening between the columna and lip were freshened and closed with sutures. The union was perfect. On December 27th the final operation was performed on this case, and was for the purpose of relieving the notch at the line of union of the lip. Wharton Jones' operation, consisting of two incisions through the entire thickness of lip, on either side of the median line, extending from a point just below the columna downwards and outwards to but not through the vermilion border, forming an inverted V incision, was performed. The V-shaped flap included between these incisions was then pulled down, so that the notch was obliterated; the upper portion of the incision was closed by a pin suture, and the remaining portions by fine silk sutures. The lines of the incisions left after this operation was of the form of an inverted Y. The final result is illustrated in Plate XVIII, Case I.

Case II.—John, aged 9. The operation performed December 12, 1878, for the formation of a new columna, was the same as in Case No. I. On January 10th, 1879, the columna formed by the first operation being too prominent, its integument was dissected up and replaced after another portion of the bony septum had been removed, resulting in a well-formed columna. The operation on the lip was the same as in Case I, resulting in perfect union. Its appearance is shown in Plate XVIII, Case II.

COMPOUND COMPLICATED HARE-LIP.

In this case the vermillion border was perfect, but the lip was shortened so that the lower projected beyond the upper. In a few months the upper lip had stretched to such an extent that the difference was scarcely appreciable. This boy also had a very peculiar formation of the right hand, consisting in the absence of the ring-finger and its metacarpal bone. The little finger sprang off at right angles to the hand, just below the line of the carpal bones, and I cannot say whether it had a short metacarpal bone or not. It could be flexed in the manner shown in Fig. 114.

Case III.—Charles, aged 18. In this case the inter-maxillary bone was in contact with, although not united to, the right maxilla. The orifice of the right nostril was perfectly formed: the fissure in the lip and hard palate was unusually large, measuring four cm. in width. The mucons membrane covering the left inferior turbinated bone was hypertrophied, forming a prominent mass in the nostril. The operation was performed as in the preceding cases, with this exception: the columna being formed and the lips brought together at one operation. The union was perfect.

A supplementary operation was afterward performed. The left ala nasi being too widely separated from the septum, a V-shaped piece was removed between these two points, which were then brought together so as to form a perfectly oval nostril. A piece was also removed from the right side of the columna, reducing its thickness. The patient was discharged in the condition seen in Plate XVIII, Case III, still having a slight notch on the margin of the lip. Three years after, I found that all traces of the notch had disappeared.

In concluding this paper I desire to say a few words regarding Uranoplasty and Staphylorrhaphy. I had performed these operations successfully a number of times before operating upon the case described in the first part of this paper. Since that time I have carefully looked into the results, and find that although in a large proportion of the cases the operations are successful so far as the closure of the fissure in the hard and soft palate is concerned, yet so little, if any, benefit is obtained in the improvement of the articulation, that I have been forced to the conclusion that they should be discarded as surgical procedures in adults. I refer of course to cases in which the cleft is congenital. Mr. George Pollock says "the real object of the operation of closing the cleft in the palate is to enable the patient to articulate hereafter, plainly and intelligibly—not to enable the child to take food."* This last difficulty, he

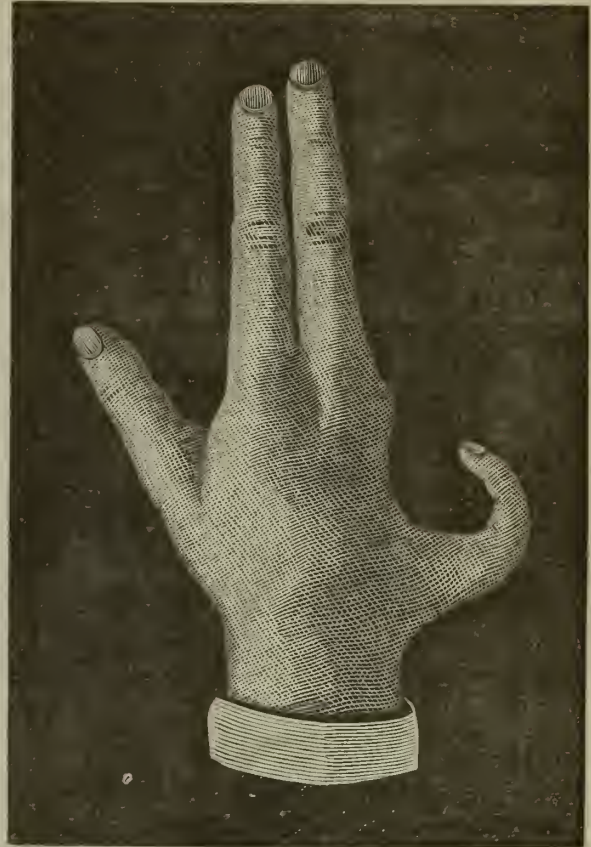


FIG. 114.

* Holmes' Surgery, 2d Edition, Vol. IV, p. 423.

COMPOUND COMPLICATED HARE-LIP.

states, is overcome in a few days. My three patients had no trouble whatever in this respect. What the result would be if the operation was performed in early life, I have no means of knowing. From my own experience in operations upon the adult I can conclusively state that no improvement has ever taken place in the patient's articulation. The reason is undoubtedly this: the newly formed palate is rigid, tense, and deficient in length, and in a large majority of cases it cannot be brought into apposition to the pharyngeal wall, so as to close the buccal from the nasal cavities; and unless this be done perfect articulation becomes impossible. The division of the palatine muscles, which is necessary in the performance of this operation, also interferes, to a certain extent, with the proper use of the organs in speech.

While I have never seen a case in which the nasal twang was improved, I have seen a number of patients in whom an artificial palate rendered the articulation absolutely perfect. Norman W. Kingsley, M.D.S., D.D.S., of this city, who has paid a great deal of attention to this subject, has invented a soft artificial velum, which is so under the control of the surrounding and adjacent muscles, opening and closing the passages at will, that the wearer, after a certain amount of practice and education, acquires a perfect articulation. In one of my cases (No. III), Dr. Kingsley applied one of his artificial palates. Before introducing it an experiment was performed in my office, which I will describe in Dr. Kingsley's own words:

"Altogether the most extensive deformity of this kind, and the one having the most disastrous influence on the speech that I have ever seen, was a young man upon whom Professor J. L. Little, of the College of Physicians and Surgeons, New York, operated for compound hare-lip, and who afterwards came into my hands for an artificial palate. * * * Previous to the introduction of the artificial palate the following experiment was tried in the presence of a number of well-known surgeons: I wrote upon a slip of paper the following syllables, which the patient pronounced to the best of his ability, repeating each one several times: Bo, Lo, Ho, Mo, Ko, Po, Go, No, &c. The sound given by him to each of these syllables was written by the gentlemen present as nearly as they could be understood. A comparison of the various records showed that the only unmistakable syllables of the whole list were Ko, Go, and Ho, all throat sounds. Of the doubtful ones, No and Mo were interchangeable, and so were Lo and Ko; and of all the others no sound that he gave was any clew to the syllable he was trying to pronounce."*

The velum was applied, and the patient remained under Dr. Kingsley's instruction about two weeks only. He then returned to his home, where he was practiced in correct pronunciation by Dr. Levi W. Case. He returned, in three months, and was able to read a page from a medical journal before a number of physicians so that every word was understood.

I would urge, however, that the operation be performed if possible in early life, as recommended by Mr. Thomas Smith of St. Bartholomew's Hospital,† with the hope that, as the organs develop with the growth of the child, this difficulty will be overcome and artificial means dispensed with.

* A Treatise on Oral Deformities, p. 462.

† Transactions Medico-Chirurgical Society, Vol. LI., p. 79.

CYSTO-ADENOMA OF THE THYROID GLAND.

BY CHARLES BUCKLEY, M.D.,

Member of the Rochester Pathological Society.

The accompanying plates, Figs. 115, 116, represent the following case

In April, 1882, I was called to see Miss H. S., aged 56 years, a native of Germany, who complained of difficult breathing, incessant cough, inability to rest in the recumbent position, severe attacks of asthma, and painful deglutition. The patient gave the following history: Ten years ago she observed a swelling the size of a hickory-nut, situated in the left lobe of the thyroid gland. During the succeeding years it continued to enlarge, notwithstanding energetic treatment.

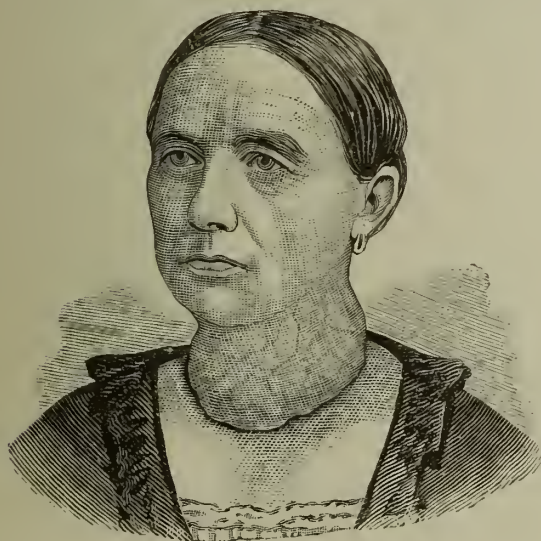


Fig. 115.



Fig. 116.

On examination a large growth was found occupying the front and sides of the neck, extending from the anterior edge of the right sterno-cleido-mastoid muscle across the larynx to the superior carotid triangle of the left side, displacing the carotid artery, jugular vein, and sterno-cleido-mastoid muscle backward. The carotid artery was found in a position corresponding to a vertical line drawn from the

CYSTO-ADENOMA OF THE THYROID GLAND.

lobe of the left ear. Its inferior border projected below the clavicle externally, and internally it occupied the subclavian triangle, resting on the apex of the left pleura. The integument was movable and contained a number of dilated veins.

On physical examination moist râles were found in the bronchi of both lungs, with dullness on percussion at the apex of left lung. The difficult respiration was gradually increasing, and she was slowly but surely becoming suffocated. At her earnest solicitation I consented to attempt the removal of the mass. On May 20th, 1882, the operation was commenced by making an incision six inches in length through the integument and carefully dissecting down. The left posterior border of the tumor rested against the cervical vertebra; the posterior border pressed against the larynx, to which it was firmly attached. It was freely supplied by the superior thyroid artery, and by the ascending cervical and transversalis humeri arteries, which were ligated in close proximity to the axis, pains being taken not to injure the recurrent laryngeal nerve. The operation consumed $2\frac{1}{2}$ hours. The pressure caused by the growth being removed from the apex of the lung, the patient was seized with a violent paroxysm of coughing, which caused a rupture of the pleura, and air exuded at each expiration through the aperture of the pleura and wound. The wound was carefully dressed antiseptically, the edges were brought in apposition by sutures, and a compress applied. Toward evening the patient was attacked with asthma, which caused severe venous hemorrhage. The wound was partially reopened to secure the bleeding vessels, when the apex of the lung was observed at each expiration to ascend above the clavicle about $1\frac{1}{2}$ inches; during inspiration the lung descended into the thoracic cavity. The patient made a good recovery.

It is the opinion of the writer that, notwithstanding authorities condemn interference with tumors involving the thyroid gland, an operative procedure was justifiable in this case.







19

SECONDARY MYELOID DISEASE OF PLEURA AND LUNG.

BY WILLIAM OSLER, M.D., M.R.C.P.,

Professor of the Institute of Medicine, McGill University; Pathologist to the General Hospital, Montreal.

The following case is of interest from the extensive secondary affection of the lung and pleura. My colleague, Dr. George Ross, has kindly furnished the clinical report :

B. M., æt. 15, came under my care during the month of October, 1880. He was then complaining of shortness of breath, and had a rather troublesome cough. In the month of March previously he had been admitted into the General Hospital, under Dr. Roddick, for a large swelling at the left knee. This was diagnosticated as myeloid tumor, and the limb was amputated in the middle of the thigh. Subsequent examination proved that such was the nature of the growth. Whilst he had been under the care of the surgeons he had not complained of any chest symptoms, and the physical examination of these regions was entirely negative.

On admission it was found that the degree of dyspnœa was considerable. He was propped up with pillows and became distressed if his head was lowered. His cough was particularly annoying at night and prevented him from sleeping. There was a small quantity of muco-purulent expectoration. He suffered no pain.

The chest seemed wanting in expansive movement. The percussion was absolutely flat from the left clavicle downwards till past the cardiac area, and laterally to the edge of the axilla. The sternal and right infra-clavicular regions were also flat. No chest-sounds were to be heard over this area, and the vocal fremitus was absent. The heart-sounds were also much obscured. The diagnosis was a secondary tumor within the thorax, and it was thought probable that some pericardial effusion co-existed with it.

From this time the dyspnœa became progressively greater until it reached a most intense degree, and severe suffocative attacks ensued, and in one of these he died in January, 1881. No other symptoms or signs of intrathoracic pressure were observed, with one special exception, viz., enlargement of the veins of the front of the thorax. When first seen these were faintly traceable under the skin. They soon began to dilate, and for some time before his death some of them stood out as great tortuous, varicose vessels, as large as the little finger.

SECONDARY MYELOID DISEASE OF PLEURA AND LUNG.

Autopsy.—Body emaciated. No return of disease in the stump. Morbid condition confined to the chest. On removal of the sternum the mass, represented in the plate, was seen projecting from the anterior border and under surface of the upper lobe of the left lung, covering the pericardium, pushing back and compressing the lung, and occupying the greater part of the mammary region. It was not closely adherent to the sternum or ribs in front; behind it was attached to and grew from the pleura, and had extended for about an inch into the lower part of the anterior border of the upper lobe. Anterior surface was irregular, presenting grayish-white, fleshy prominences, mixed with areas of a dark maroon color. On section the tumor presented an alveolated appearance from the number of irregular cysts scattered through it. They varied in size from a pea to a marble, and contained a reddish fluid. In the centre of the growth the texture had a brownish color and was interspersed with hemorrhages. The upper lobe was compressed and airless, the lower crepitant; no secondary masses. Between the diaphragm and the pleura was a mass the size of an apple, having the same general characters as the larger one.

Right Lung.—A large flattened mass covered the upper lobes in front and above, and was closely united to the costal pleura. The lower lobe was free, but behind, near the spine, there was a rounded growth the size of an orange. On removal, the upper half of the organ looked rough and shreddy where it had been torn away from the ribs, the impressions of which crossed it transversely. The tissue was reddish-brown, with white, fleshy-looking masses scattered through it, and here and there a dark sanguineous cyst. Section of the upper lobe showed that its tissue was invaded; the hinder portion alone remained and was flattened. Upon the middle lobe were two firm, grayish-white masses, which on section were like recently formed spongy bone, reddish in color and with numerous ossific spicules scattered through the tissue. Two smaller growths of a similar character were on the anterior margin of lower lobe. The rounded tumor near the spine presented osseous spots at the periphery, while the central part was occupied by a large hemorrhage. The bronchial glands were not involved, nor were the lymph glands in the groins or abdomen.



FIG. 118.

The histological characters of the growths corresponded to myeloid sarcoma. The chief elements were spindle cells, among which the multinuclear giant cells were imbedded. (Fig. 118.) In many regions these were scanty or absent, and the growth was like a spindle-celled sarcoma. This was most evident in the masses on and in the right lung. In the mass on the left pleura the condition on section, with the numerous cystic spaces, was just such as Mr. Gray describes as myelocystic tumors. The giant-celled sarcomata are not often followed by secondary growths; but when they do occur, the lungs are apt to be the seat of the recurrence. This case is similar, in many respects, to one published by Dr. Wilks. (*Path. Transactions*, Vol. IX.)



20

CONGENITAL UNION OF THE FINGERS, WITH TWO OTHER CASES OF MALFORMATION OF THE HAND.

BY J. H. POOLEY, M.D.,

Formerly Professor of Surgery in Starling Medical College. Professor of Medical Jurisprudence in the Columbus Medical College.

THOMAS E. B., aged sixteen, a native of the United States, came under my care May 20, 1874.

He was the subject of a very interesting and complete congenital fusion of the phalanges of both hands and feet, Syndactylitis universalis. As one hand and foot was an almost exact duplicate of the other, a description of one will suffice for an understanding of both.

Taking, then, the right hand for description, we find the following peculiarities: *Dorsal aspect*—1st. The ring and middle fingers are entirely united from their commissure to their extremities.

While normally the middle finger projects somewhat beyond the index and ring fingers, in this case it is not so, as the extremities of the united fingers are on a level with each other, being made so by their close union, and yet the middle finger is of its normal length. It is therefore curved, with its convexity outward, on the back of the hand, where it rises or projects above its neighbors; and it is plain that if the unnatural connection were severed it would project beyond the digit on either side of it, as in a normal hand.

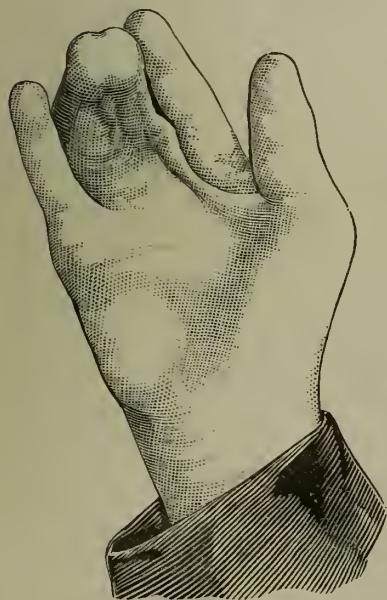


FIG. 119.

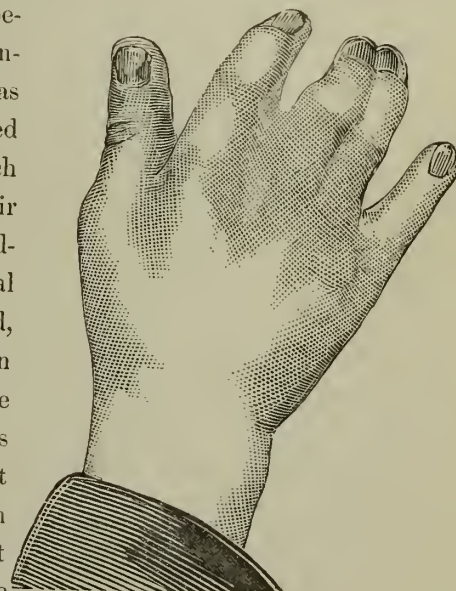


FIG. 120.

CONGENITAL UNION OF THE FINGERS.

The line of union is even with the dorsum of the hand, except where the knuckles of the middle finger rises above its neighbor. The thickness of the union is equal to the thickness of the fingers themselves; it is not a mere web. The two nails seem to arise from one matrix; they lie deeply imbedded in the skin; the line of separation between them is marked by a faint depression. All along the terminal or ungual phalanx the union is very firm, apparently bony.

2. The commissure between the index and middle finger is extended as far as the first phalangeal articulation, forming a long web between these two fingers. Originally they were joined together like

the two fingers already described, and the remaining web is the result of a partially successful operation performed in infancy; the little finger is normal in every respect.

Between the thumb and the index there is a thick web, extending as far as the middle of the first phalanx of the thumb. A cicatrix here shows the trace of a partial attempt to separate what was a complete union, performed at the same time as the operation already referred to, and even less successful in its results.

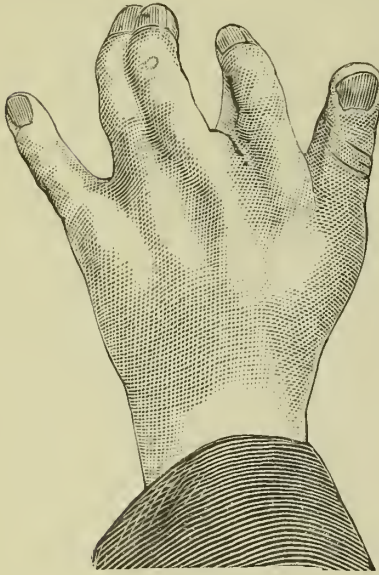


FIG. 121

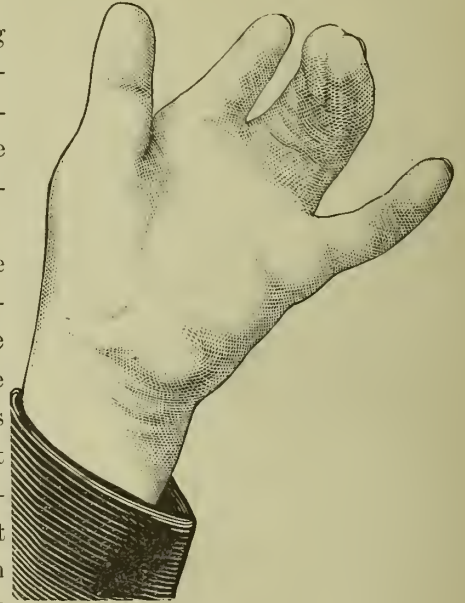


FIG. 122.

The whole palmar surface presents a deep cup-shaped hollow, from the necessary curvature of the united fingers as already described.

The skin of the palm is thick and hard. The feet present the same kind of deformity as the hands, but not in so marked a degree; and as they do not interfere with locomotion, are of no practical interest or importance, and call for no treatment. The patient has no knowledge of similar, or indeed of any malformation in his family, on either side.

The illustration, from a photograph, represents the dorsal and palmar aspect of both hands, and gives a very fair idea of the condition of the patient. Considering the difficulty of keeping apart the surfaces of united digits after their separation, the previous unsuccessful attempts made in this case and the extensive nature of the attachment, I determined to proceed in a different way; to make a flap from the dorsal surface of one finger and the palmar surface of the other respectively, and fold them over, so that each would cover the raw surface of the other finger.

This operation is described in "Annandale on Malformation of the Fingers and Toes."

CONGENITAL UNION OF THE FINGERS.

Erichsen barely alludes to it in his "System of Surgery," but gives a diagram of the operation, which is reproduced in the accompanying woodcut.

My operation proved in every way unsatisfactory. It was more difficult to perform than had been anticipated, and the result was an utter failure. It was performed as follows: An incision was made along the centre of the *dorsal* surface of the *middle* finger from one end to the other, and a flap, including integument and subcutaneous tissue, dissected up laterally as far as the middle of the *ring* finger. Another and similar incision was made on the *palmar* surface of the ring finger, and the flap dissected half-way across the *middle* finger. The flaps were then held back, and the remaining

tissue forming the bond of union between the two fingers divided. The union at the ungual extremity was osseous. The flaps were then adjusted; that dissected from the *dorsum* of the middle finger being wrapped round the palm or surface of the ring finger, and *vice versa*.



FIG. 123.



FIG. 125.



FIG. 126.

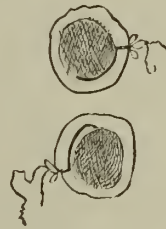


FIG. 127.

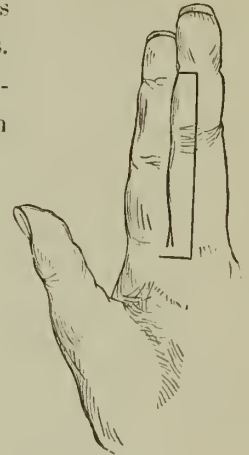


FIG. 124.

They did not adapt themselves as had been expected. The flap raised from the *dorsum* could be made to touch the line of integument on the palmar surface of the other finger by some stretching, but the palmar flap being tough, thick and inextensible, could not be made to meet by nearly a quarter of an inch.

The edges, however, were brought together as well as possible and a simple dressing of lint applied. A piece of rubber tubing was then passed through the septum between the middle and index finger, about half an inch above the normal commissure, and attached to a band round the wrist, to establish a permanent opening, and thus form a basis for future proceedings on the thick web remaining from the unsuccessful operation in infancy.

June 9th. Since the operation the fingers have been going on from bad to worse. No healing took place, but everything sloughed, until at one time it looked as though the boy would inevitably lose his hand.

To-day the second and third phalanges of the middle and ring fingers were removed, as they only hung by shreds of necrotic tissue. The attempt to make useful fingers out of useless ones had of course failed, and the only thing left was to prevent further sloughing and save the hand.

June 20th. The healing process has been going on slowly since the last report, and the wounds now present a healthy appearance, and but a small surface remains to heal over. Patient meantime has been kept on iron and nutritious food.

CONGENITAL UNION OF THE FINGERS.

The hand is more deformed and useless than before the operation. The first phalanges, which remain, have reunited, and there is now a short, awkward-looking stump between the index and little fingers, which perhaps would be better removed, but the patient says he has had enough of surgery for the present. He was discharged July 4th.

The miserable result of this case was a bitter disappointment to me. The operation, studied in description and diagram, seemed so promising, and the results of mere division in these cases, as illustrated in the history of this very one, are ordinarily so unsatisfactory, that I had no hesitation or misgivings in undertaking a proceeding that seemed easy and certain to succeed.

But the inextensible nature of the integument, its close connection to the parts beneath, and the impossibility, from the very nature of the case, of making the flaps larger than the surface they are intended to cover, and thus allow for shrinkage, proved to be practical and fatal obstacles to these flattering anticipations.

From the experience gained in this case, I do not think that the operation is one to be recommended, and I should never undertake it again.

Indeed, I will go further, and say that it should be utterly discarded from surgery, and buried in the limbo of obsolete procedures. Division of the junction merely with rigid attention to the after-dressing, even if it sometimes yields very imperfect results, is far better than running such risks as the entire destruction of the fingers, or even the whole hand. The establishment of a permanent orifice at or just beyond the situation of the normal commissure, previous to division of the bond of union, would no doubt prove a useful procedure. Of course, that commoner class of cases, where there is merely a thin web of skin, are comparatively easy to deal with. But as I intend to

treat this whole subject *in extenso* in a future publication, I shall say no more about it for the present.

Of the other two cases of which I present illustrations, I have no history whatever to offer. The parties came under my notice quite accidentally. In each case it is the right hand which is malformed, having only two fingers and a thumb. The missing fingers are in each case the index and minimum. In one case the fingers present, middle and ring, are closely united throughout, and the curvature produced by this blending of two fingers of unequal length is well shown; the patient declined surgical interference, although the usefulness of the hand was much impaired. In the other case the fingers are perfectly distinct and well formed, and the hand quite useful. Both of them were laboring men; the other hands were natural; neither knew of any malformation among their relatives.

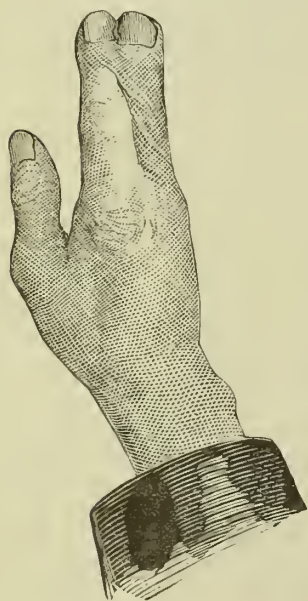


FIG. 128.

As far as I know, such cases as these are very rare.

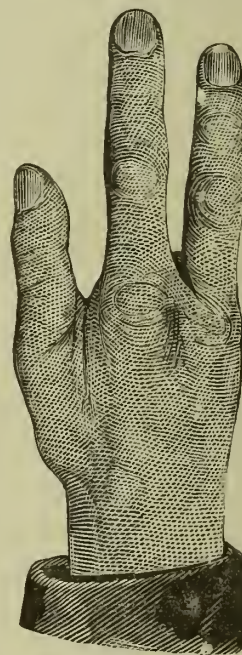
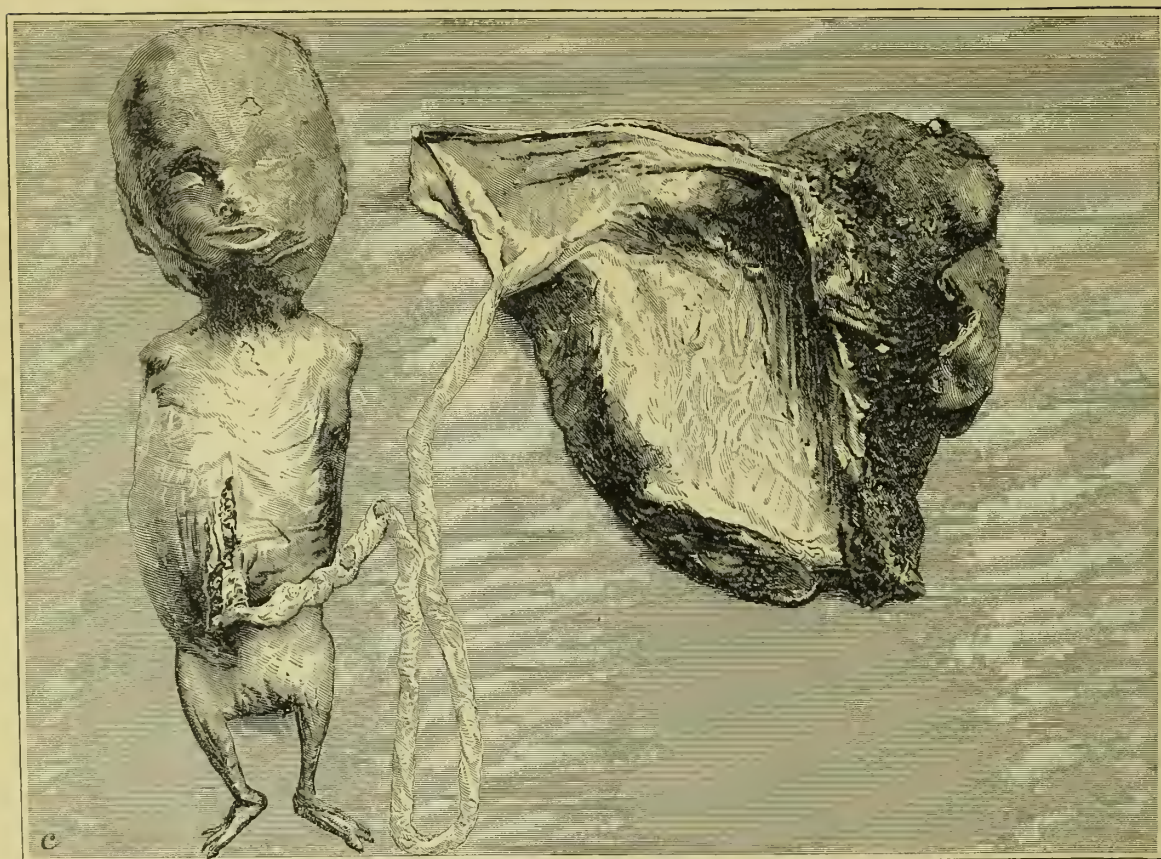


FIG. 129.





XX. *a*, HYDROCEPHALUS PEROPUS. *b*, ANENCEPHALUS, HERNIA UMBILICALIS.
c, ABRACHIUS PEROPUS.

(Cases of Prof. G. J. ENGELMANN.)



21

A TERATOLOGICAL CONTRIBUTION.

BY GEO. J. ENGELMANN, M.D., OF ST. LOUIS,

Professor of Obstetrics in the Post Graduate School of the Missouri Medical College, St. Louis.

Although Teratology has advanced with the progress of embryology, it still lags far behind its sister science and may be said to be as yet in its infancy, the tardy development of this science being due to a superstitious dread and a feeling of abhorrence for monstrosities and deformities of all kinds, innate to man, common to all people and all civilizations, more fully developed the more primitive the people, yielding to a certain extent to civilization, but completely overcome by advanced science only.

The instinctive dread of monstrosities is so great among primitive people that the new-born child, if in any way seriously deformed, is at once put to death and done away with. This superstition among some peoples even extends to twins, and not only does the new-born infant suffer, but even the innocent mother is exiled or punished in other ways. Among the more tolerant tribes the more slightly deformed are indeed permitted to live, but they are endured merely as objects of pity; they nourish and clothe themselves as best they can, keeping out of sight of their people. So universal are these customs, more or less stringent, that so close an observer as Alexander von Humboldt makes the statement that deformities are extremely rare, if ever occurring, among primitive peoples. The fact is that few are permitted to live, and those who do live exist as best they can in solitude and exile. The Romans, while avoiding them, venerated them, as being gifted with peculiar powers. Cicero speaks of them: *De Divinatione*, I.: "Monstra, ostenta, portenta, prodigias nominantur, quia monstrant, ostendunt, portendunt et praedicunt."

During the middle ages they were again looked upon as products of hell and Satan, as it was believed that God could not form such horrible creatures, and this, of course, prevented the study of these unfortunate beings. They were regarded as a *Signum mali ominis*. The remarkable oddity of form and peculiarity of shape often exhibited led to the most remarkable deductions, which were greatly furthered by fabulous descriptions and truly monstrous illustrations; and to these wanderings of imaginative minds was the science of teratology confined up to the end of the seventeenth century. The authors approved of the barbarous laws of the Greeks and Romans, condemning monstrosities to

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death, and it is with great misgivings that some of the more advanced admitted that giants, dwarfs and children with supernumerary fingers and toes should be permitted to live, but demand that even these must be raised far from human intercourse. Riolanus (*De Monstro nato Lutetiae*, 1605).

Not until the beginning of the eighteenth century does scientific research begin, and since then, especially with the science of embryology, has the study of teratology gradually developed. No satisfactory conclusions have as yet been reached. Almost every author follows his own classification and his own views, and much work must be done before these can be made to harmonize.

Foerster truly states that morbid processes in the ovum result very differently, according to the degree of development during which they occur, and consequently separates the resulting monstrosities into two grand divisions.

First. Morbid changes similar to those which result from the same diseases after birth are such as appear after the beginning of the fourth month, when all parts are formed and merely increase in size.

Secondly. The totally different changes which occur before this period, when one or more parts are not yet formed or are still developing; these are the real monstrosities, and if we think but a moment this must teach us how ridiculous are the supposed effects of maternal impressions, often occurring when the affected parts have long been perfectly formed. He establishes three classes:

First. Supernumerary or oversized members.

Second. Defective.

Third. Abnormal shape or changes in the germ or embryonic development.

I merely state these to show how unsatisfactory they are, as one single monstrosity may appear under all of these classes, and repeat that I will attempt neither classification nor explanation, but will merely describe these three monstrosities with the hope that they may prove useful to others. The gathering of material and description of individual cases will serve the specialist in his work, and it is with a view to this that I add my mite by the brief description of the following somewhat unusual cases which lately came into my hands:

a.—Hydrocephalus Peropus.

This female child, the result of a premature delivery in an unfortunate girl, a primipara, is thirteen and five-eighths inches in length; the head measures three and seven-eighths inches; the body five and seven-eighths inches; the lower extremities three and seven-eighths inches. The peculiarity consists in the combination of hydrocephalus with deformity of the extremities, in addition to which we have the supernumerary toes and fingers.

The hands have five fingers each with a morbidly changed sixth, which appears more like a tumor attached to the little finger; on the right foot we find six well-shaped toes, so that it is difficult to say which is the supernumerary; whilst upon the left foot the little toe is so deformed as to make it evident that the addition is in this member. The deformity of the lower extremities in connection with the hydrocephalus and other morbid changes would undoubtedly lead us to presume that they

A TERATOLOGICAL CONTRIBUTION.

had been caused by faulty innervation and not by local influences, such as pressure due to the position of the child in the womb, as is often supposed, and possibly the actual cause in many instances. In this case, although the body of the child very easily and perfectly admitted of being replaced in the position it had *in utero*, the very striking deformity in legs and feet could hardly be thus accounted for, but must be referred to pathological changes in the nerve centres, which unquestionably exist; I believe that this specimen is one of unusual importance, as it seems conclusively to prove the dependence of certain deformities, especially of legs and feet which are so frequently ascribed to position and consequent compression, to a pathological condition of the nerve centres.

I would by no means deny that deformities, above all pes valgus or varus, may result from compression or other local influences, more particularly in a feeble organization, but the advocates of each theory are too sweeping and general in their deductions, ascribing all deformities to one cause, whereas to my mind we here have a striking example of the effect of faulty innervation. The validity of one cause does not exclude that of the others.

M. C. Darest (in a recent paper, *Académie des Sciences. Comptes rendus de la Séance du 23 Jan.* 1882) gives some striking examples of the development of monstrosities by posture and by compression of the embryo in consequence of tardy development of the amnion, which acts as the compressing agent. This fact he has observed in birds' eggs, but also in the embryo of mammals; and he believes that the deformities of the feet in the human foetus are mainly due to this cause.

b.—Anencephalus, Hernia Umbilicalis.

A female foetus eleven and three-eighths inches in length; the face two inches; body four and ten-sixteenths inches; lower extremities five and seven-sixteenths, whilst the feet measure two and one-quarter inches; the head, as is usual in these cases, sits directly upon the shoulders, with no neck. The cleft in the spine extends to what would probably be the first dorsal vertebra. Some little fluid, no cerebellum whatsoever in the small sac pendant from the spinal aperture; the anterior portion of the skull covered by a thick scalp with some hair. The peculiarity lies mainly in the abdominal organs, these are all, with the exception of the kidneys and pelvic viscera, contained in the umbilical sac, which has a circumference of seven inches, extending three inches from the abdomen. The navel-string is inserted in the lower third of the sac, which has somewhat the appearance of the integument and passes in this to the abdominal wall below. The circumference of the sac at its base is a little over two inches; it is a delicate semi-transparent membrane, very much like the chorion; in it lie the entire liver, spleen, stomach and intestines; the ligamentum suspensorium hepatis is attached to the sac. The abdominal cavity is very small and completely filled by an immense horse-shoe kidney, the left lobe of which is over an inch in length and twice the size of the right; both, however, extending up to the diaphragm. The descending colon passes down in the centre of the body over the bridge of the horse-shoe kidney and the promontory, in the hollow of the sacrum behind the uterus. The pelvic viscera are all present, but, like the sexual organs, somewhat backward in their development; the Fallopian tubes with their fimbriated extremities are very marked, as are also the ligamenta ovarii, while the ovaries themselves are simply recognizable as a thickening of the tissue. The external sexual organs are fully developed, with a double vagina.

A TERATOLOGICAL CONTRIBUTION.

c.—*Abraehins Peropus*.

Female foetus, five inches in length; head one and seven-eighths inches; body two and three-eighths; lower extremities three-fourths. The head is large, face small; external ear rudimentary, situated lower than ordinary from the tip of the nose to the line of the upper lip; the breadth of shoulders is one and one-half inches. The arms are entirely wanting; the apparent stump is owing to a development of the condyloid process of the scapula; instead of the glenoid cavity we find a round, smooth, cartilaginous protuberance appearing like the caput humeri. The scapula and clavicle are otherwise well formed. The pelvis is small. The leg is formed by a single bone which has a large head, and is attached to the pelvis loosely by numerous ligaments. The head of the bone has more the appearance of that of the tibia than that of the femur. The bone itself is more like a femur than a tibia. It is round in shape and is directly attached to the long, narrow foot which has three metatarsal bones and three toes, corresponding to the large toe and the two adjacent ones. The fibula and two toes, which may be said more or less belonging to this, is wanting. The afterbirth also offers various peculiarities. The cord is very much twisted; the foetal extremity attached low down, less than half an inch above the pubes and one and seven-eighths inches below the neck. The placental extremity enters the membranes fully half an inch from the border of the placenta, there being really no placental attachment whatsoever. The placenta is three and one-half inches in length by two and one-half inches in breadth, and is peculiar in the irregularity of the formation of its lobes. The condition of the funis is deserving of some attention; whether influencing the irregular development of the foetus in any way or not I dare not say, but certain it is that a thinned or twisted cord necessitates an insufficient supply of blood, as the circulation is obstructed, if the vessels are of sufficient size [in many cases they are contracted], so that even without additional mechanical obstruction they are unable to supply the demand. In most cases the development of the embryo is thereby retarded; it dies, and abortion follows, either of an incompletely developed ovum, or of a mole if the ovum is retained in utero a certain length of time after death of the embryo.

These conditions I have frequently observed, and I am inclined to attribute the cause of the miscarriage in this case to the death of the embryo from insufficient nutrition through the obstructed vessels of the funis, yet I doubt whether this will in any way explain the deformity, although it is one of retarded or incomplete, not of active though perverted development.

Unfortunately, I can obtain no history of any of these monstrosities but the first. We certainly cannot account for this deformity by the fact of the mother's anxiety or the troubles of an unfortunate girl, and no history would assist us in explaining the peculiar formation of the various organs in the other two.



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APPARATUS FOR TREATING FRACTURE OF THE PATELLA.

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In treating a fracture of the Patella it is desirable to bring and keep the fragments in as close apposition as possible. There are two principal obstacles to attaining this result: (1) A firm blood clot on the broken surface of the fragments—as I have demonstrated by post-mortem examinations; (2) The contraction of the muscles of the quadriceps extensor.

Some years ago I devised an apparatus for treating fracture of the patella, and in 1880 I reported the treatment of three cases by this apparatus. (See No. 1230 *Medical and Surgical Reporter*.) My colleagues and myself have since treated several cases of fracture of the patella by the same apparatus.

The essential parts of this apparatus are represented in the accompanying drawing, Fig. 133. First, a single inclined plane is made by firmly joining two pieces of board at a right angle; one is a bed-piece, and the other is an upright-piece, as seen in the diagram. The bed-piece is bevelled where it goes under the thigh. Two quadrangular bars are hinged to the upper end of the bed-piece. These bars are long enough to move up and down on the sides of the upright-piece, and are sustained by a bandage going over a hook on the outside of the upright-piece. A piece of muslin or canvas, is fastened to the movable bars, making a kind of hammock on which to put the injured limb. This can be seen in the drawing.

Second. The upper ends of two quadrangular pieces of adhesive plaster are cut into strips and applied obliquely from below upward—in one case inward, in the other case outward—on the dorsum of the thigh, over the quadriceps extensor. The lower ends of these extending straps are properly attached to cords that play over wheels fastened to the sides of the upright piece, and that have weights suspended from their distal ends. A roller bandage, beginning on the upper fragment of the patella, is passed around the thigh upward for a sufficient distance to prevent the extending adhesive straps from coming off on account of the tension of the weights, which may vary from three to six pounds each.

Third. The lower fragment of the patella is attached to the tibia by an inextensible tendon, and can be kept in place by means of a small sand-bag resting on it, as in the diagram. When the lower limb is in position, on the single inclined plane, the sand-bag will act on account of the force of gravity. It may be necessary to fasten this sand-bag on by adhesive plaster, in order to prevent it falling off sideways.

APPARATUS FOR TREATING FRACTURE OF THE PATELLA.

This apparatus has the following advantages :

1. The force of gravitation is utilized for keeping the fragments in apposition, and is applied in such a way as not to cease acting.
2. The patient can move about in bed to a considerable extent, and not interfere with the proper action of the retentive forces ; and this affords great relief, as I have more than once seen.
3. The limb will not be excoriated by its contact with the hammock on which it rests.
4. There will be no material interference with the blood supply to the fragments of the patella, and so delay union.
5. The leg will be left free, so that passive motion can be made at the ankle-joint from time to time : also passive motion can be made at the knee-joint in such a manner as not to interfere with union, and so as not to make ankylosis so imminent.

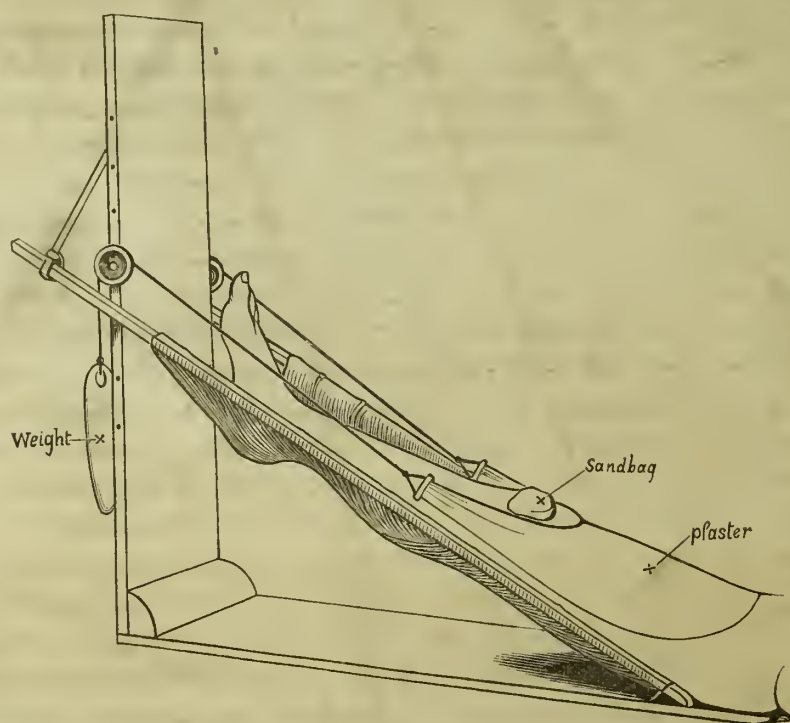


FIG. 133.

